8.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS (IRFA)

The Initial Regulatory Flexibility Analysis (IRFA) is conducted to comply with the Regulatory Flexibility Act and provides analyses of the economic benefits and costs of the preferred alternatives on small entities. Certain elements required in an IRFA are also required as part of a supplemental environmental impact statement (SEIS). Thus, this section should be considered only part of the IRFA; the rest of the IRFA can be found throughout this document.

8.1 DESCRIPTION OF THE REASONS WHY ACTION IS BEING CONSIDERED

Please see Chapter 1 for a description of the need for action

8.2 STATEMENT OF THE OBJECTIVES OF, AND LEGAL BASIS FOR, THE PROPOSED RULE

Please see Chapter 1 for a description of the objectives of the proposed rule.

8.3 DESCRIPTION AND ESTIMATE OF THE NUMBER OF SMALL ENTITIES TO WHICH THE PROPOSED RULE WILL APPLY

NOAA Fisheries considers all permit holders to be small entities. A description of the fisheries affected can be found in Chapter 3 of this document.

The HMS FMP established six different limited access permit types: 1) directed swordfish, 2) incidental swordfish, 3) swordfish handgear, 4) directed shark, 5) incidental shark, and 6) tuna longline. To reduce bycatch concerns in the pelagic longline fishery, these permits were designed so that the swordfish directed and incidental permits are valid only if the permit holder also holds both a tuna longline and a shark permit. Similarly, the tuna longline permit is valid only if the permit holder also holds both a swordfish (directed or incidental, not handgear) and a shark permit (directed or incidental). Swordfish handgear and shark permits are valid without another limited access permit.

As of November 2003, approximately 235 tuna longline limited access permits had been issued. In addition, approximately 203 directed swordfish limited access permits, 100 incidental swordfish limited access permits, 249 directed shark limited access permits, and 357 incidental shark limited access permits had been issued. Because vessels authorized to fish for swordfish and tunas with pelagic longline gear must possess a tuna longline permit, a swordfish permit (directed or incidental), and a shark permit (directed or incidental), the maximum number of vessels potentially affected by this proposed rule is 235 (the number of tuna longline permits issued). The bycatch reduction measures analyzed in this document could potentially affect all vessels currently permitted to participate in the pelagic longline fishery (235), although only about half of all permit holders are actually active in this fishery. For additional detail regarding the small entities involved with this fishery, please refer to Chapter 6.

Other sectors of HMS fisheries such as dealers, processors, bait houses and gear manufacturers, some of which are considered small entities, might be indirectly affected by the proposed alternatives, particularly the shift to required hook and bait types, and the required mitigation gears. However, the proposed rule does not apply directly to them. Rather it applies only to permit holders and fishermen. As such, economic impacts on these other sectors are discussed in Chapters 4, 6, and 7.

8.4 Description of the Projected Reporting, Record-keeping, and Other Compliance Requirements of the Proposed Rule, Including an Estimate of the Classes of Small Entities Which Will Be Subject to the Requirements and the Type of Professional Skills Necessary for Preparation of the Report or Record

The preferred alternatives in this document will not result in additional reporting or record-keeping requirements, but will impose additional compliance requirements. Alternatives A3 , A10, and A16 will require fishermen to possess specific hooks, bait, and release equipment and require their use under specific guidelines.

NOAA Fisheries expects alternative A3 , A10, and A16 to increase costs initially, but to result in long-term cost savings, through lower replacement costs (under A3 and A10) and increased hook retention stemming from A16. An informal internet and telephone survey of hook suppliers provides a range in price of approximately $0.26 to $0.66 ($0.4176 avg) per hook for large 18/0 commercial grade circle hooks and a range of approximately $0.26 to $1.00 (avg. $0.5733) per hook for large commercial grade J-hooks. Assuming that an average of 2500 hooks per vessel are needed to initially comply with proposed hook requirements (equip vessels with enough hooks for one trip), the compliance cost, on a per vessel basis, may range from $657.25 to $1,650.00, with an anticipated average cost of approximately $1,044.00. The compliance costs for 235 vessels (all permits), 148 (active permits), and individual vessels are detailed in Table 8.1 below.

Table 8.1 Initial 18/0 Circle Hook Compliance Costs: 2500 Hooks per Vessel

	Minimum Cost ($0.2629 per hook)	Maximum Cost ($0.66 per hook)	Average Cost ($0.4176
1 vessel	$675.25	$1,650.00	$1044.00
148 vessels	$97,273.00	$244,200.00	$154,512.00
235 vessels	$154,453.75	$387,750.00	$245,340.00

Assuming no vessels possess the proposed required hook type already, a high end estimate (every hook lost on every set, no hook used more than once) of the cost (using average price) to re-rig

the Atlantic pelagic longline fleet (based on the number active vessels and hooks set in 2002 including in the NED experiment), is $2,986,091 (7,150,602 hooks fished 2002 * $0.4176 per hook). The cost per vessel would be expected to be approximately $20,176 per vessel for a year's worth of hooks ($2,986,091/148 vessels). Again, this number is thought to represent a substantial over estimate of the true cost, as not every hook is lost on every set. Further, NOAA Fisheries estimates that this cost represents a savings to fishermen of approximately 27 percent versus rigging with the same number of J-hooks.

Alternatives A3 and A10 should not increase the needed skill level required for HMS fisheries, as the physical act of switching hook types is a normal aspect of commercial fishing operations. Alternative A16, which would require fishermen to possess and use sea turtle handling and release gear in accordance with handling and release guidelines specified by NOAA Fisheries, may impose compliance costs and require additional skills. NOAA Fisheries estimates that a full suite of release gear could cost between $589.00 and $1048.80. The costs for this gear may be reduced if fishermen are able to construct various pieces of equipment themselves, rather than purchasing pre-assembled gear from a commercial supplier. The equipment specifications and Careful Release Guidelines can be found in Appendix B1 and Appendix B2, respectively.

Traditionally, bait accounts for 16 to 26 percent of the total costs per trip. Any fluctuations in price and availability of mackerel or squid baits could have a substantial impact on profitability, either positive or negative. There could also be unquantifiable compliance costs as fishing crews who have not traditionally fished with a particular hook and bait combination familiarize themselves with the most efficient techniques. Mackerel and squid baits are generally abundant, but availability will likely depend upon available harvesting and distributional capacities.

8.5 Identification of All Relevant Federal Rules Which May Duplicate, Overlap, or Conflict with the Proposed Rule

Fishermen**,** dealers, and managers in these fisheries must comply with a number of international agreements, domestic laws, and other FMPs. These include but are not limited to, the Magnuson-Stevens Act (MSA), the Atlantic Tunas Convention Act (ATCA), the High Seas Fishing Compliance Act, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA)**,** the National Environmental Policy Act (NEPA), the Paperwork Reduction Act (PRA), and the Coastal Zone Management Act (CZMA). NOAA Fisheries strives to ensure consistency among the regulations with the Fishery Management Councils and other relevant agencies. NOAA Fisheries does not believe that the preferred alternatives in this document would conflict with any relevant regulations, Federal or otherwise.

8.6 description of any Significant Alternatives to the Proposed rule That Accomplish the Stated Objectives of Applicable Statutes and That Minimize Any Significant Economic Impact of the Proposed Rule on Small Entities

One of the requirements of an IRFA is to describe any alternatives to the proposed rule which

accomplish the stated objectives and which minimize any significant economic impacts. These impacts are discussed below and in Chapters 4 and 6 of this document. Additionally, the Regulatory Flexibility Act (5 U.S.C.§ 603 (c) (1)-(4)) lists four general categories of "significant" alternatives which should be discussed. These types of alternatives (all of which assume the proposed action could impact small entities differently than large entities) are:

1. Establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;
2. Clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;
3. Use of performance rather than design standards; and,
4. Exemptions from coverage of the rule for small entities.

As noted earlier, NOAA Fisheries considers all permit holders to be small entities. In order to meet the objectives of this proposed rule and the statutes (i.e., MSA, ATCA, ESA) as well as address the management concerns at hand, NOAA Fisheries cannot exempt small entities or change the reporting requirements for small entities. Additionally, the proposed hook and bait requirements and sea turtle release gear requirements would not be as effective with different compliance requirements. The physical act of switching hook types is not expected to impose a significant compliance burden, as this is a normal aspect of commercial fishing operations. Initial hook compliance costs are expected to be approximately $1044.00. The requirement to possess and utilize sea turtle release and disentanglement gear according to prescribed design standards will impose a compliance burden. Compliance costs for the release gear are expected to be approximately $589.00 to $1048.80. However, the design standards allow for construction of some of the equipment, subject to NOAA Fisheries approval, from material that is readily available and using skills that most fishermen likely possess. Drafts of the equipment standards and Careful Release Guidelines can be found in Appendix B1 and Appendix B2, respectively. These documents have been attached to the draft SEIS for public review an comment. As stated earlier, these measures would not be as effective with different compliance requirements. Thus, there are no alternatives discussed which fall under the first and fourth categories described above. Alternatives under the second and third categories are discussed below with other alternatives that were considered.

As described below, NOAA Fisheries considered a number of alternatives that could minimize the economic impact on small entities.

8.6.1 Bycatch Reduction Measures

The preferred alternatives for bycatch and bycatch mortality mitigation (A3, A10 and A16) were designed to reduce sea turtle interactions and the mortality associated with such interactions to levels that will allow compliance with the ESA, while minimizing adverse economic impacts to the extent practicable.

Preferred Alternative A3 provides fishermen the flexibility to select a hook and bait combination, prior to departing port, that is effective at catching either swordfish or tunas, with either option being effective at reducing sea turtle interactions. Based upon the results of the NED experiment, NOAA Fisheries projects that fishermen may realize a change in swordfish catches of +16 to -30 percent (by weight), depending upon whether they choose to equip and deploy an 18/0 offset hook with mackerel or 18/0 non-offset hook with squid, respectively. Experimental results also indicate that fishermen could experience changes in tuna catches ranging from -84 to +25 percent (by weight), depending upon whether they choose to deploy an18/0 offset circle hook with mackerel, or an 18/0 non-offset hook with squid, respectively. The potential tuna increases are less certain based on the limited tuna catch data obtained during the NED experiment. To maximize revenues, given the impacts of these hook and bait combinations on swordfish and tuna catches, fishermen will have to make a decision about which species they will target, and which gear they will deploy, prior to departing port. Under alternative A3, vessels able to successfully target swordfish or tunas, and which equip and deploy with the most efficient hook and bait combination available for a chosen target species, average gross vessel revenues may increase between $12,724 and $25,757, respectively. These potential increases are likely to be over estimates, but provide an estimated range of gross vessel revenues of $199,798 to $212,831. For vessels unable to specifically target swordfish or tunas and which engage in mixed trips, NOAA Fisheries estimates that the aggregate impact of alternative A3 may be to change gross vessel revenues by between -$71,706 (18/0 offset circle hook with mackerel bait) and +$1,031 (18/0 non-offset circle hook with squid), providing a range of gross vessel revenues of between $115,368 and $188,105. The actual impacts would likely fall between these ranges as many vessels would be able to target specific species, and would be expected to use the most efficient hook type for that target, however, not all vessels may choose the same hook and bait combination for every trip. Please refer to Chapters 4, 6, and 7 for background, analyses, and additional detail on economic impacts.

Preferred Alternative A10 provides fishermen the flexibility to select a hook and bait combination, prior to departing port, that is effective at catching either swordfish or tunas, with either option being effective at reducing sea turtle interactions. Given that no pelagic longline vessels can currently fish in the NED, any revenues generated from fishing in the NED will raise gross vessel revenues as compared with the *status quo* (*i.e.*, any income derived from future NED trips would result in a positive social and economic impacts, regardless of hook and bait restrictions). Under alternative A10, NOAA Fisheries estimates that fishermen may realize a change in swordfish catches of +16 to -30 percent (by weight), depending upon whether they choose to equip and deploy the 18/0 offset circle hook with mackerel bait, or the 18/0 non-offset circle hook with squid, respectively. Results of the experiment also indicate that fishermen could experience changes in tuna catches of -84 to possibly as much as +25 percent (by weight), depending upon whether they choose to fish with 18/0 offset circle hook with mackerel bait, or an 18/0 non-offset circle hook with squid, respectively. However, these potential tuna increases are less certain, based on the limited tuna catch data obtained during the NED experiment. Should fishermen successfully target swordfish using the most efficient treatment available under this alternative, fishermen may realize an increase in gross vessel revenues of $25,753 to

$212,827 in total. In aggregate, combining potential increased swordfish revenues with decreased tuna revenues, under option i, vessels fishing in the NED under this hook and bait combination could see an increase in gross vessel revenues of $8,076, from $187,074 to $195,149, based on historical levels. This represents an increase over pre-closure revenues. Under option ii, fishermen engaging in a mixed trip in the NED area, would likely see a decrease in gross revenues of approximately $44,725, thereby reducing annual gross vessel revenues to $142,349. However, NOAA Fisheries anticipates that most fishermen will select option i for trips in the NED area over option ii, given that most of the fishing effort in the NED has historically targeted swordfish. Option ii, was included to allow fishermen maximum flexibility in targeting species of interest. Based on traditional levels of effort in the NED, NOAA Fisheries projects that 12 vessels will return to the NED for the opportunity to increase revenues if the area is reopened under this or any other reasonable restrictions. Please refer to Chapters 4, 6, and 7 for background, analyses, and additional detail on economic impacts.

Preferred alternative A16 (release gear and handling guidelines requirement) would likely have only minor initial adverse economic impacts, as there are currently similar requirements in the pelagic longline fishery, with some positive long-term impacts resulting from reduced hook replacement costs. The purchase of this release equipment would likely be a relatively minor expense to most fishermen. NOAA Fisheries estimates that a full suite of release gear could cost between $589.00 and $1048.80. As stated above, the costs for some of this equipment could be reduced if fishermen were able to construct some pieces themselves, instead of purchasing pre-assembled gear from commercial suppliers.

Other Alternatives Considered

Alternative A1 (no action) would not achieve the biological goals of the proposed rule or ensure compliance with the ESA. Further, the no action alternative would allow the full adverse economic impacts of the NED closure to be realized given the termination of the NED research experiment and its attendant economic benefits. Alternative A2 (limit vessels with pelagic longline gear onboard, at all times, in all areas open to pelagic longline fishing excluding the NED, to possessing onboard and/or using only 18/0 circle hooks with an offset not to exceed 10 degrees and mackerel bait) would increase adverse economic impacts on fishermen, compared to the proposed measures, by limiting flexibility in selecting a more efficient hook and bait treatment for use in targeting tuna. As such, those fishermen outside the NED unable to successfully target swordfish would be adversely impacted to a greater extent, compared with the proposed measures, given the expected loss in tuna revenues associated with this hook and bait treatment.

Alternative A4 (limit vessels with pelagic longline gear onboard, at all times, in all areas open to pelagic longline fishing excluding the NED, to possessing onboard and/or using only one of the following combinations: i)18/0 circle hook with an offset not to exceed 10 degrees and mackerel bait; or, ii) 18/0 non-offset circle hooks and squid bait; or, iii) 9/0 “J”-hooks with an offset not to exceed 25 degrees and mackerel bait) may have either greater or lesser adverse economic impacts

than the preferred alternative, depending upon the hook and bait combination chosen and the target species of a specific trip. However, this alternative would not likely achieve one of the management objectives of this rule, which is to reduce the mortality of incidentally caught sea turtles. As discussed in Chapter 4, interactions with "J"-hooks have a higher incidence of deep hooking and tend to result in more serious injuries for sea turtles, which are likely to result in a higher post-release mortality rate than do interactions with circle hooks.

Alternative A5 (limit vessels with pelagic longline gear onboard, at all times, in all areas open to pelagic longline fishing excluding the NED, to possessing onboard and/or using only 16/0 or larger circle hooks with an offset not to exceed 10 degrees) would not, by itself, achieve the biological objectives of the proposed rule. Alternative A5 would likely have minor to moderate adverse economic impacts on fishermen, given potential decreases in swordfish catch. While alternative A5 in combination with A7, and either A14 or A15 would be expected to reduce sea turtle interactions to levels that comply with the ESA, the combined economic impacts of these suites of alternatives, are expected to be greater than the alternatives individually and would likely have more substantial adverse impacts on distinct segments of the fleet that fish in the GOM and NEC than the preferred alternatives. Alternative A6 (allow pelagic longline fishing for Atlantic HMS in the NED), would be expected to have positive economic benefits, but would not meet the biological objectives of this rulemaking or ensure compliance with the ESA.

Alternative A7 (open the NED to pelagic longline fishing and limit vessels with pelagic longline gear onboard in that area, at all times, to possessing onboard and/or using only 18/0 circle hooks with an offset not to exceed 10 degrees and mackerel bait) would have positive social and economic effects as compared to the status quo or historical perspectives, but compared to preferred alternative A10, it would limit the ability of fishermen to efficiently target swordfish or tunas by allowing only a single hook and bait in the area.

While alternative A8 (limit vessels with pelagic longline gear onboard, at all times, in the NED to possessing onboard and/or using only 20/0 or larger circle hooks with an offset not to exceed 10 degrees) appears effective at reducing sea turtle interactions, and would have positive social and economic benefits over the status quo, it would have minor adverse economic impacts when viewed historically. Please see Chapter 4 for additional details. Alternative A8, if selected, would have a greater adverse impact on revenues associated with landings of tuna and a less positive impact on revenues associated with landings of swordfish than preferred alternative A10. Alternative A9 may have afforded greater positive or negative economic impacts than preferred alternative A10, given the sizable anticipated changes in both swordfish tuna catches. However, as with alternative A4, allowing the use of "J"-hooks under this in alternative would not have achieved the goal of this rulemaking or the HMS FMP to minimize the mortality of incidentally caught sea turtles.

Alternative A11 (prohibit the use of pelagic longline gear in Atlantic HMS fisheries), would achieve the biological objectives of this rulemaking, but would impose the most adverse economic impacts of all the alternatives. Alternative 12 (close the western GOM year-round)

would have adverse economic impacts on a distinct segment of the fishery, and would not by itself achieve the goals of the rulemaking.

Alternative A13, would likely have substantial economic impacts on a large and distinct segment of the U.S. pelagic longline fleet, communities, buyers, and dealers in the Gulf of Mexico. While data indicate potential increases in catches of swordfish and bigeye tuna of 17 and 32 percent in numbers of fish, respectively, and a decrease of swordfish catches of two percent in numbers of fish may result from such a closure, the actual impacts are unclear as potential changes in weight of landings remain unknown. While the impacts are not quantifiable at this time, NOAA Fisheries anticipates that the overall impacts of a closure of this size would likely be adverse in nature. As discussed in Chapter 4, because a high percentage of the historical fishing effort has been located in the area considered for the time/area closure, a substantial number of fishing vessels would likely have to adjust their fishing practices accordingly. This could result in fishermen being required to travel greater distances to reach favorable fishing grounds, and spending longer periods at sea which could potentially increase fuel, bait, ice, and crew costs. Because of an increase in loggerhead sea turtle interactions associated with a relocation of fishing effort, alternative A13 would not by itself achieve the goals of the proposed rule. In combination with other alternatives, such as hook and bait restrictions, it would be expected to have greater adverse impacts than the alternative alone and would likely have more substantial adverse impacts on a distinct segment of the fleet that fishes in the GOM than the preferred alternatives.

Alternatives A14 and A15 (prohibit the use of pelagic longline gear in HMS fisheries in an area of the central Gulf of Mexico and the Northeast Coastal Statistical Reporting Area year-round or October through May, respectively) would not, by themselves, achieve the biological objectives of the proposed rule. Although Alternatives A5, A7 and either A14 or A15 would not, independent of one another, sufficiently reduce sea turtle interactions to ensure compliance with the ESA, these suites of alternatives (A5, A7, and A14, or A5, A7, and A15) would achieve the necessary reductions if combined. The combined economic impacts of these suites of alternatives, however, would be expected to impose greater adverse economic impacts than the preferred alternatives.

Alternative A14 (prohibit the use of pelagic longline gear in HMS Fisheries in areas of the Central GOM and NEC year-round) would likely have substantial economic impacts on a large and distinct segment of the U.S. pelagic longline fleet that fishes in the GOM and NEC, as well as associated communities, buyers, and dealers. NOAA Fisheries analysis indicates that as a result of such a closure, swordfish and bigeye tuna catches could potentially increase 18 and 33 percent in numbers of fish, respectively, and catches of yellowfin tuna could potentially decrease two percent in numbers of fish. The actual impacts are unclear because changes in the weight of landings is not known. Because a high percentage of the fishing effort has been located in the areas considered for the time/area closures, a substantial number of fishing vessels would have to adjust their fishing practices accordingly. Therefore, vessels may be required to travel greater distances to reach favorable fishing grounds, and spend longer periods at sea which could result in increased fuel, bait, ice, and crew costs. Further, this alternative by itself would not achieve

the biological objectives of proposed rule. Alternative A14 in combination with A5, and A7, would achieve the biological goals of the proposed rule, but may have large adverse economic impacts on significant portions of the fleet and the dependent communities.

Alternative 15 (prohibit the use of pelagic longline gear in HMS Fisheries in areas of the Central GOM and NEC from May through October), similar to alternative A14, would likely also have substantial adverse economic impacts on a large and distinct segment of the U.S. pelagic longline fleet that fishes in the GOM and NEC, as well as associated communities, buyers, and dealers. NOAA Fisheries analysis indicates that as a result of such a closure, swordfish, yellowfin tuna, and bigeye tuna catches could potentially increase five percent, three percent, and 17 percent in numbers of fish, respectively. The actual impacts are unclear because changes in the weight of landings is not known. Because a high percentage of the fishing effort has been located in the areas considered for the time/area closures, a substantial number of fishing vessels would have to adjust their fishing practices accordingly. Therefore, vessels may be required to travel greater distances to reach favorable fishing grounds, and spend longer periods at sea which could result in increased fuel, bait, ice, and crew costs. Further, this alternative by itself would not achieve the biological objectives of proposed rule. Alternative A15 in combination with A5, and A7, would achieve the biological goals of the proposed rule and ensure compliance with the ESA, but may have larger adverse economic impacts on significant portions of the fleet and the dependent communities than the preferred alternatives.

References Cited in Chapter 8

NOAA Fisheries. 2003. Evaluating bycatch: a national approach to standardized bycatch monitoring programs. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Silver Spring, MD. 88 pp.